February 2001
UPDATE
Deactivation & Decommissioning Focus Area

HIGHLIGHTS

♦ DDFA Mid-Year Review and Symposium

The DDFA Mid-Year Review and Decommissioning Symposium will be conducted at Florida International University's Roz and Cal Kovens Conference Center on April 17–19, 2001. The 3-day meeting includes 2 days of DDFA Mid-Year Review and 2 days of breakouts and presentations (1 day will overlap day 2). It is anticipated that there will be 250–300 attendees, 25 indoor exhibits, and 10 outdoor live technical demonstrations. The DDFA Mid-Year Review portion of the meeting will cover the DDFA Large-Scale Demonstration and Deployment Projects, Accelerated Site Technology Deployment Projects, Environmental Management Science Program, and associated Industry and Cross-Cutting Program activities. The Decommissioning Symposium tracks are planned as follows: (1) Business and Contracting Aspects of D&D; (2) Work Forces Issues; (3) ES&H Issues and Programs; (4) Long-Term Stewardship of Nuclear Facilities; (5) Impact of New D&D Technologies; (6) D&D Material Disposition; (7) Status and Lessons Learned from World-Wide Projects; and (8) Stakeholder and Public Involvement Programs.

LARGE-SCALE DEMONSTRATION AND DEPLOYMENT PROJECTS

♦ LANL LSDDP

As part of the technology selection process, technologies for possible demonstration at LANL were discussed. Technologies in the areas of crate opening, size reduction of TRU metal, air filtration, PPE, communications, and air monitoring were considered. Possible technologies for demonstration include advanced nuclear air pre-filter to increase lie of downstream HEPA filters, FIU crate cutter, steel cutting circular saw, RaceScan communications system, dry ice blasting, clamshell cutter, wire saw, electrochemical decontamination, aerosol fogging, Brokk, strippable coating, strippable coating rollup machine, and mercury monitor.

For more information:

http://www-emtd.lanl.gov/LSDDP/DDtech.html

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♦ INEEL Fuel Storage Canals and Associated Facilities LSDDP

The ICT is currently working with DOE and the Research and Development Institute of Construction Technology (NIKIMT) in Moscow, Russia, to demonstrate a Russian technology at the INEEL that may provide significant advantages over the baseline technologies. The technology is a 3D-Gamma Locator Device (GLD) to provide three-dimensional characterization of radioactivity in areas of extremely high activity. It is a robotic unit that provides feedback to a computer based control system. The sensor is mounted on a tracked vehicle and operated remotely using a vehicle mounted camera. This technology stands out among its competitors because it (1) operates on radio frequencies completely non-tethered and it can maneuver around corners and transmit through walls, (2) has a broader range of sensitivity (i.e., 60KeV to 6MeV compared to 100KeV to 2MeV), and (3) has a broader scanning angle (i.e., 330° horizontal and 125° vertical compared to 73° horizontal and 55° vertical). Two test engineers visited NIKIMT in Moscow, Russia, to evaluate the equipment and the feasibility of bringing it to the United States and performing a demonstration at the INEEL. Based on feedback from the test engineers, the evaluation was positive and the INEEL LSDDP is in the process of developing a scope of work and cost estimate to bring the technology to the INEEL for a demonstration. Plans to demonstrate the NIKIMT gamma locator device (GLD) and isotopic analyzer at Test Area North (TAN) 616 and deployment in cubicle 13 in Power Burst Facility (PBF) were discussed and will be included in the scope and cost estimate. The demonstration test plan was issued for comment on October 2, 2000. An Isotopic Identification Device (IID) will be attached to the robot to identify the isotopes generating the radioactivity observed by the GLD during the demonstration. A robot will be provided by the INEEL robotics crosscut program to mobilize the GLD and the IID to remotely characterize the rooms in TAN 616. The robot, the GLD, and the IID all operate remotely—completely untethered—making them unique to other technologies. The demonstration was postponed due to the equipment not being released by the Russian Ministry. The demonstration will be rescheduled when a tentative release date has been established by the Russian Ministry.

For more information:

http://id.inel.gov/lsddp

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ADDITIONAL PROJECT HIGHLIGHTS

♦ Fast Response Isotopic Alpha Continuous Air Monitor (CAM)

NETL has been informed that Thermo Technologies, a subsidiary of Thermo Power, is being eliminated. Prior to this announcement, Thermo Power had completed the development of the first prototype and an advanced prototype unit, and was scheduled to perform a field demonstration under the LSDDP this summer. Discussions were held considering the possibility of an agreement in which Thermo Power would transfer the project to another contractor so that the development of the fast CAM could be continued. However, Thermo Power has decided not to move forward with any such agreement. Therefore, the equipment will be placed on the excess/surplus lists. The equipment may be transferred to LANL or potentially another site, allowing the development work to continue.

For more information:

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♦ Technology for Real-Time Measurement of Surface and Airborne Beryllium

NETL has enlisted the technical input of Rocky Flats; Characterization, Monitoring and Sensor Technology (CMST) Crosscut Program; DDFA, and other EM-related personnel with expertise and experience in instrumentation and field measurements for review and comment on SEA's Conceptual Design Report for the real-time beryllium monitor. Comments have been received and are being transferred back to SEA for incorporation into the document and design. End-user requirements and regulatory drivers are the most important factors in the design.

Meanwhile, SEA is moving ahead on the "fixed" components of their system. Fabrication of a LIBS hardware set to conduct analysis of Be loaded filter media was completed last month. Integration of the Chromsoft software, which operates the spectrometer and CCD detector, was initiated. Upon detailed examination of this software, it was determined that the function to allow an external triggering of the CCD exposure and positioning of the X-Y coordinates was in fact not implemented in the software. To overcome this limitation, a custom software program was developed that communicates directly with the CCD detector. This program will be integrated with the program used to control the X-Y stage, allowing an automated process for LIBS analysis of a filter media test sample using a large number of spark positions.

For more information:

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♦ High Productivity Vacuum Blasting System

A new dust separator has been proposed for the LTC 1072 machine that will be used in the commercial prototype tests. This separator will consist of two centrifugal separators that can work simultaneously. This new separator will replace the existing separator on the LTC 1072 machine for separating the fine grits from the dust. The specific dimensions for these two centrifugal separators will be determined by empirical calculations.

The design of the rectangular nozzle with hydrodynamic diameter of $^3/_8$ inch will be finalized based on the information gathered from the numerical simulation results and practical review. For verifying the performance of the redesigned rectangular nozzle, the mathematical method developed in Phase I was used to perform the numerical study of air-particle two-phase flow inside the nozzle. The numerical results were obtained at the inlet pressure of 100 psi. The calculated average velocity of the particles on the nozzle exit plane was 113 m/s. The calculated results showed that the particle velocity was high (113m/s) and the particle distribution was uniform on the exit plane rectangular nozzle. Thus, the design of the rectangular nozzle with hydrodynamic diameter of $^3/_8$ inch was successful.

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♦ Oversize TRU Waste Laser Cutting System ASTD

GSI-Lumonics continues testing of the trailer-mounted laser cutting system at their Minnesota facilities. The robotic arms, the smaller one (ABB Model 4400) to hold the cutting end-effector and the larger one (ABB Model 6400) to hold the object being cut, are still expected to arrive at Lumonics around the February 2001 time frame (they have been testing the system with a "loaner" robotic arm from ABB for integrating the laser cutting head positioning system with the robotics). The pre-deployment of the laser cutting system at the Hazardous Materials Management and Emergency Response Training and Education Center, known as HAMMER, Richland, Washington, is anticipated for the Mid-April 2001 time frame, with full deployment of the laser cutting system at the LANL Decontamination and Volume Reduction System now expected around the spring of FY2002. There will be a paper and poster presentation of the laser-cutting project at Waste Management 2001.

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♦ AEA Technology—Demonstrates Soft Media Blasting System for Pipe Decontamination

On January 30, 2001 AEA Technology Engineering Services, Inc. demonstrated an internal pipe decontamination system at their facility in Pittsburgh, Pennsylvania. The technology is an adaptation of AEA's soft media blasting system used for decontamination of exterior con-

taminated surfaces (e.g., equipment externals). The system consists of a hopper system for holding and feeding the abrasive blasting media, a remote-controlled drive unit and spray nozzle, cyclone separator, and HEPA filtration unit. During the demonstration, the system effectively cleaned a six-foot, 8-inch internal diameter stainless steel pipe in 12 minutes to a white metal surface. The decontamination process resulted in 3 ft^3 of waste that can be compressed to as little as 0.5 ft^3. AEA Technology is investigating other blasting media options to improve upon the current 6:1 volume reduction ratio. The system is capable of decontaminating pipe segments up to 24 feet long ranging in diameter from 2 to 42 inches.

The demonstration was observed by representatives of Westinghouse Savannah River Company (WSRC) who are interested in this technology for use within the Decon Facility at the Savannah River Site (SRS). SRS currently has no dry decontamination method and is using acid wash techniques to remove oxide layers from interior surfaces of pipes. As a result of the successful demonstration, the system will be shipped to SRS for further validation testing and ultimately full-scale demonstration. WSRC personnel have asked for some minor modifications to the system to ensure against any potential safety violations at the site. In addition, WSRC has asked AEA Technology to investigate designing and fabricating a modified deployment jig that can be used to decontaminate tank riser plugs, which are currently stored out of doors at SRS.

For more information:

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♦ Florida International University

Technology Assessment Program:

Two further facility dismantlement technologies for building materials have been identified.

- Emerging Construction Technologies: Soundless Chemical Demolition Agents
- Demolition Technologies Incorporated: BRISTAR demolition agent.

The University of Tennessee has performed a PS-11 statistical analysis using the initial EPA Reference Method 5i results that were provided by Airtech. The analysis indicated that only one of the three PM CEM's evaluated, the ESA instrument, was successful.

D&D Technology Information Management and Dissemination:

- The Worker Health and Safety database has been developed.
- Vendors were contacted requesting new catalogs and updated information in order to get new technologies.

Technology Development, Integration, and Deployment Program:

As part of the Technology Development and Integration Program, two thermal and two mechanical technologies have been down-selected as the appropriate candidates for modifications by assessing demonstration experiences at FIU-HCET and throughout the DOE Complex. The down-selection process looked at the technology's life expectancy, end point of cut achieved, secondary waste generation and classification, ease of decontamination, performance data, and technology specifications (utilities, dimensions, etc.) The technologies selected are the Oxy-Gasoline Torch, Plasma Arc Torch, shears, and a high-speed band saw.

For more information:

HCET homepage: http://www.hcet.fui.edu

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♦ Canyon Disposition Initiative (CDI)

A concrete coring unit was used to obtain samples to support the structural assessments and to determine whether potential contaminants have migrated beyond the confines of the cells. The Remote Concrete Coring System, consisting of a Brokk 150N with concrete coring attachment, was used for obtaining concrete samples in process cells 5, 6, 26, and 36. Remaining samples were shipped for analysis during a previous reporting period. The results of the sampling were received during the period and did not indicate significant migration of contaminants in the concrete.

Samples of sludge removed from the 24-inch drainpipe were obtained during a previous reporting period. The results of the samples were received during the period. In addition, the liquid sampling, required to support the Sampling Plan, was completed.

Discussions are continuing with regulators to ensure good communications during the development of the Phase III Feasibility Study and Proposed Plan.

For more information:

http://www.bhi-erccom/canyon/canyon.htm

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♦ DOE/Utility Memorandum of Understanding (MOU)

Members of the Focus Area team met with the Decommissioning Manager at Rancho Seco in October 2000 and discussed future plans for NETL support of the MOU and the Sacramento Municipal Utility District (SMUD) level of interest in future demonstrations of innovative technologies at Rancho Seco. Members of the Focus Area team are scheduled to meet again with the Rancho Seco staff during the month of February 2001 to further potential deployments at the facility under the MOU and with Florida International University.

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UPCOMING EVENTS

APRIL 2001

DDFA Midyear Review and Decommissioning Symposium Florida International University
April 17–19, 2001
Conference Center, North Campus
Miami FL

American Nuclear Society (ANS)—9th International High-Level Radioactive Waste Management Conference (IHLRWM)
April 29–May 3, 2001
Las Vegas, NV

JUNE 2001

American Nuclear Society —Annual Meeting
June 18–21, 2001
Milwaukee, WI

D&D updates and reports (comments and address corrections):

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Quarterly reports, monthly updates, and further information about the D&D Focus Area can be found on the World Wide Web at ***www.netl.doe.gov/dd***.

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